

**REMARKS**

This Amendment is filed in response to the FINAL Office Action mailed on December 29, 2003. All objections and rejections are respectfully traversed.

Claims 1-53 are in the case.

Claims 1, 3-14, 20-23, 27, 32-35, 40, 45, 49-53 were amended to better claim the invention.

All amendments were done to improve the wording of the claims, and no amendments were done to avoid cited art. Accordingly, Applicant respectfully urges that this Amendment after FINAL Rejection under 37 C.F.R. 1.116 puts the claims in better condition for allowance, and so the Examiner is requested to enter and consider this amendment.

At paragraph 3 of the Office Action the Examiner questions claiming “electromagnetic signals propagating on a computer network”.

MPEP (8 th. Ed. rev. 1) 2106 IV, B, 1(c) states:

(c) Natural Phenomena Such as Electricity and Magnetism

Claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or magnetism, *per se*, and as such are nonstatutory natural phenomena. *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 112-14 (1853). However, a signal claim directed to a practical application of electro-

magnetic energy is statutory regardless of its transitory nature. See *O'Reilly*, 56 U.S. at 114-19; *In re Breslow*, 616 F.2d 516, 519-21, 205 USPQ 221, 225-26 (CCPA 1980).

As held in *O'Reilly v. Morse*:

"If Morse, therefore, was the first to discover that the power of electromagnetism could be used for the purpose of recording telegraphic signs, and devised one practical mode for using it, he may, by a general claim, secure to himself the right of so applying it, as well as the particular devices by which he did so." 56 U.S. (15 How.) 62 p. 86.

Applicant respectfully urges that the steps of the referenced method claims are novel and therefore patentable, and that in accordance with the holding of *O'Reilly v. Morse*, the present claims to "electromagnetic signals propagating on a computer network" are patentable subject matter.

Further, because the claimed steps are novel, the claim is therefore patentable.

*O'Reilly v. Morse* has been cited in 301 cases, in accordance with a Shepard's search, but more importantly the following U. S. Supreme Court cases since the year 1946 cited *O'Reilly v. Morse*:

1. Cited by:

*Markman v. Westview Instruments*, 517 U.S. 370, 134 L. Ed. 2d 577, 116 S. Ct. 1384, 1996 U.S. LEXIS 2804, 64 U.S.L.W. 4263, 9 Fla. L. Weekly Fed. S 540, 96 Cal. Daily Op. Service 2788, 96 D.A.R. 4642, 38 U.S.P.Q.2d (BNA) 1461 (1996)  
116 S. Ct. 1384 p.1393  
517 U.S. 370 p.384  
134 L. Ed. 2d 577 p.588

2. Cited in Dissenting Opinion at:

*Diamond v. Diehr*, 450 U.S. 175, 67 L. Ed. 2d 155, 101 S. Ct. 1048, 1981 U.S. LEXIS 73, 49 U.S.L.W. 4194, 209 U.S.P.Q. (BNA) 1 (1981)

Cited in Dissenting Opinion at:

450 U.S. 175 p.204  
67 L. Ed. 2d 155 p.176  
Cited by:  
450 U.S. 175 p.188  
67 L. Ed. 2d 155 p.166

3. Cited by:

*Diamond v. Chakrabarty*, 447 U.S. 303, 65 L. Ed. 2d 144, 100 S. Ct. 2204, 1980  
U.S. LEXIS 112, 206 U.S.P.Q. (BNA) 193 (1980)  
447 U.S. 303 p.309  
65 L. Ed. 2d 144 p.150

4. Followed by, Cited in Dissenting Opinion at:

*Parker v. Flook*, 437 U.S. 584, 57 L. Ed. 2d 451, 98 S. Ct. 2522, 1978 U.S. LEXIS  
122, 198 U.S.P.Q. (BNA) 193 (1978)

Followed by:

437 U.S. 584 p.592  
57 L. Ed. 2d 451 p.458  
Cited in Dissenting Opinion at:  
437 U.S. 584 p.598  
57 L. Ed. 2d 451 p.462

5. Cited by:

*Gottschalk v. Benson*, 409 U.S. 63, 34 L. Ed. 2d 273, 93 S. Ct. 253, 1972 U.S.  
LEXIS 129, 175 U.S.P.Q. (BNA) 673 (1972)  
409 U.S. 63 p.68  
34 L. Ed. 2d 273 p.277

6. Cited by:

*Halliburton Oil Well Cementing Co. v. Walker*, 329 U.S. 1, 91 L. Ed. 3, 67 S. Ct. 6,  
1946 U.S. LEXIS 1724, 1946 Dec. Comm'r Pat. 628, 71 U.S.P.Q. (BNA) 175 (1946)  
329 U.S. 1 p.12  
91 L. Ed. 3 p.11

Also *O'Reilly v. Morse* has been cited by the U. S. Court of Appeals, Federal Circuit, in the following cases:

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148. Followed by:

*Bd. of Educ. ex rel. Bd. of Tr. of FSU. v. Am. Bioscience, Inc.*, 333 F.3d 1330, 2003 U.S. App. LEXIS 12629, 67 U.S.P.Q.2d (BNA) 1252 (Fed. Cir. 2003)  
333 F.3d 1330 p.1341

149. Followed by:

*In re Bonczyk*, 10 Fed. Appx. 908, 2001 U.S. App. LEXIS 9256 (2001)  
10 Fed. Appx. 908 p.911

150. Cited by:

*Ethicon, Inc. v. United States Surgical Corp.*, 135 F.3d 1456, 1998 U.S. App. LEXIS 1445, 45 U.S.P.Q.2d (BNA) 1545, 48 Fed. R. Evid. Serv. (CBC) 1226 (Fed. Cir. 1998)  
135 F.3d 1456 p.1460

151. Cited by:

*Hess v. Advanced Cardiovascular Sys.*, 106 F.3d 976, 1997 U.S. App. LEXIS 2794, 41 U.S.P.Q.2d (BNA) 1782 (Fed. Cir. 1997)  
106 F.3d 976 p.981

152. Cited in Dissenting Opinion at:

*Hilton Davis Chem. Co. v. Warner-Jenkinson Co.*, 62 F.3d 1512, 1995 U.S. App. LEXIS 21069, 35 U.S.P.Q.2d (BNA) 1641 (Fed. Cir. 1995)  
62 F.3d 1512 p.1564

153. Cited in Dissenting Opinion at:

*In re Alappat*, 33 F.3d 1526, 1994 U.S. App. LEXIS 21129, 31 U.S.P.Q.2d (BNA) 1545 (Fed. Cir. 1994)  
33 F.3d 1526 p.1552  
33 F.3d 1526 p.1569

154. Distinguished by:

*Arrhythmia Research Technology, Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1992 U.S. App. LEXIS 4202, 22 U.S.P.Q.2d (BNA) 1033 (Fed. Cir. 1992)

Distinguished by:

958 F.2d 1053 p.1059

Cited by:

958 F.2d 1053 p.1056

155. Cited by:

*In re Benno*, 768 F.2d 1340, 1985 U.S. App. LEXIS 15041, 226 U.S.P.Q. (BNA) 683 (Fed. Cir. 1985)  
768 F.2d 1340 p.1346

156. Cited by:

*In re Hyatt*, 708 F.2d 712, 1983 U.S. App. LEXIS 13607, 218 U.S.P.Q. (BNA) 195 (Fed. Cir. 1983)  
708 F.2d 712 p.714

We confine the remarks herein to one of the above cited cases, *In re Alappat*, 33 F.3d 1526, 1994 U.S. App. LEXIS 21129, 31 U.S.P.Q.2d (BNA) 1545 (Fed. Cir. 1994), 33 F.3d 1526 p.1552, 33 F.3d 1526 p.1569.

The holding in *In re Alappat* was “Consequently, a computer operating pursuant to software may represent patentable subject matter” 33 F. 3d 1526 p.1545. The citations to *O'Reilly v. Morse* was by the dissent, but it is cited for the proposition that Congress is limited to providing patents for the “useful arts” 33 F.3d 1526 p.1552, and further for the proposition “On whatever theory, the unpatentability of the principle does not defeat patentability of its **practical application** (emphasis added)” 33 F.3d 1526 p.1569, although the dissent disagreed that a computer program is a “practical application”.

Applicant respectfully urges that the present claim to “electromagnetic signals propagating on a computer network” is a practical application of electromagnetic energy, and as a practical application falls within the meaning of *O'Reilly v. Morse*. Further, the claim language falls within the literal meaning of MPEP 2106 IV, B, 1(c) which states: “However, a signal claim directed to a practical application of electromagnetic energy is statutory regardless of its transitory nature.” Accordingly, Applicant respectfully urges that the claims to “electromagnetic signals propagating on a computer network” claim statutory subject matter under 35 U.S.C. 101.

At paragraph 4 of the Office Action, the Examiner raises an objection to the use of a logical OR in the claims.

Applicant distinguishes a logical OR from alternative claiming. Writing the word "or" in capital letters shows that the word "or" is used as a logical "or". Applicant respectfully urges that a claim drafted with a logical "or" is proper claim language.

According to MPEP 2173.05(h) II "or" terminology is acceptable claim language.

#### "II. "OR" TERMINOLOGY

Alternative expressions using "or" are acceptable, such as "wherein R is A, B, C, or D." The following phrases were each held to be acceptable and not in violation of 35 U.S.C. 112, second paragraph in *In re Gaubert*, 524 F.2d 1222, 187 USPQ 664 (CCPA 1975): "made entirely or in part of"; "at least one piece"; and "iron, steel or any other magnetic material." MPEP 2173.05(h) II.

Applicant respectfully urges that, when a selector can select an output from either a "microcontroller OR the TCSM", then the "or" statement is perfectly definite, and therefore is proper claim language, and is in compliance with 35 U.S.C. 112, second paragraph. Since the use of "or" is perfectly definite it is not im-permissible alternative claiming.

At paragraph 5 of the Office Action, the Examiner states that "Applicant's response to the 112 1 st paragraph does not show that the ALU enables an encryption execution unit to do anything, partly because the ALU's output is fed into a multiplexer."

Applicant's undersigned attorney acknowledges that the ALU does not enable, rather the instruction decode stage (ID stage) 720 (Fig. 7) performs this function. Accordingly, the claims have been amended to conform with this understanding.

At paragraph 6 of the Office Action, the Examiner points out that Applicant's argument was directed to "computer readable media", but the rejected claim 34 was directed to "electromagnetic signals".

Applicant respectfully urges that, however, a "computer readable media" can be a memory, a floppy disk, a CD, etc., and can be signals read from a computer network connection. Accordingly, the argument that "electromagnetic signals propagating on a computer network" are just another form of "computer readable media" is justified by the fact that the computer reads the electromagnetic signals coming in from the network. Accordingly, the network is a media which the computer reads.

At paragraph 7 of the Office Action, the Examiner mentions the scope of the claims. Applicant respectfully points out that the scope issues are addressed by substituting the "instruction decode stage (ID stage)" for the erroneous "ALU".

At paragraph 8 of the Office Action, the Examiner indicates that Farrell et al. shows a multiplexer, and that a multiplexer is a selector.

Applicant respectfully points out that Farrell does not disclose a selector which selects as set forth in claim 20, that is as:

20. A programmable processing engine of a network switch comprising:
  - an input header buffer;
  - an output header buffer; and
  - a plurality of processing complex elements symmetrically arrayed into rows and columns that are embedded between the input header buffer and an output header buffer, each processing complex element comprising a microcontroller core having an encryption tightly coupled state machine (TCSM) unit that is selectively invoked in response to an instruction decode stage (ID stage) reading an opcode; and

*a selector to select an output from either the microcontroller OR the TCSM.*

Applicant respectfully urges that Farrell et al. has no disclosure of: *a selector to select an output from either the microcontroller OR the TCSM*, as set out in representative claim 20.

Accordingly, Applicant respectfully urges that Farrell has no disclosure of a selector or a multiplexer which selects as claimed in claim 20.

At paragraph 9 of the Office Action, claims 20, 21, 27, 35, 40, 41, 44, 45, and 49 were objected to because of the phrase “either x OR y”. Also amendment of claims 44 and 49 was required, and claims 44 and 49 were accordingly amended.

Applicant respectfully urges that claims 20, 21, 27, 35, 40, 41, 44, 45, and 49 use the word “or” in a way that is consistent with all requirements of 35 U.S.C. 112 second paragraph. The use of the word “or” is in accordance with the example given in MPEP 2173.05(h) II in the discussion of Markush claims, and further is consistent with 35 U.S.C. 112 as the “selector” selects “X” or “Y”, and is not alternative claiming.

The rejections beginning on Page 3 of the Office Action are next addressed.

Page 3, paragraphs 1-2, claims 1-19 and 21-53 are rejected under 35 U.S.C. 112 first paragraph, on the grounds that “the specification does not teach an ALU enabling or transferring processing to an encryption execution unit”.

As noted above, the “ALU” has been deleted from the claims for the “enabling” function, and the “instruction decode stage (ID stage)” substituted therefore.

Page 3, paragraph 2, claims 1-19 and 21-53 were rejected under 35 U.S.C. 112 first paragraph, on the grounds that “the specification does not teach an ALU enabling or transferring processing to an encryption execution unit.” The claims have been accordingly amended to have the “instruction decode stage (ID stage)” perform this function.

Page 3 paragraph 3- page 2 top 3 lines, claims 34, 51, and 53 were rejected under 35 U.S.C. 101, with the statement that “data structures must be tangibly embodied to be statutory”.

Applicant respectfully points out that “data structures” are not claimed, but that novel method steps carried as computer executable instructions are claimed propagating over a computer network as electromagnetic signals. Applicant respectfully urges that the use of electromagnetic signals for transporting information has been patentable subject matter since the holding of *O'Reilly v. Morse* in the year 1853, concerning the then new electromagnetic telegraph.

Page 3, paragraphs 4-5, claims 1-19 and 21-53 were rejected as being unpatentable over Hawe et al., in view of Chi et al., Johns-Vanos et al., Farrell et al., Narad et al., Schneier, and the Microsoft Press Computer Dictionary.

These patents have been characterized in earlier amendments, and arguments presented urging that there is no disclosure in any of the cited patents showing Applicant's invention as set forth in Claim 1 as:

1. Apparatus for tightly-coupling hardware data encryption functions with software-based protocol decode processing within a pipelined processor of a programmable processing engine in a network switch, the apparatus comprising:
  - an encryption execution unit contained within the pipelined processor;
  - an ALU contained within the pipelined processor;

*an instruction decode stage (ID stage), in response to reading an opcode, enables the encryption execution unit to read data from a memory shared by the ALU and the encryption execution unit, and for the encryption execution unit to process the data read from the shared memory; and*

*a multiplexer to select as an output a result of processing by the encryption execution unit rather than a result of ALU processing.*

Applicant respectfully points out that none of the cited art discloses Applicant's claimed *in response to reading an opcode, enables the encryption execution unit to read data from a memory shared by the ALU and the encryption execution unit, and then the use of a multiplexer to a multiplexer to select as an output a result of processing by the encryption execution unit rather than a result of ALU processing.*

Previously Applicant argued that the ALU reads the opcode and enables the encryption execution unit, but a more detailed understanding is that the instruction decode stage performs this function, as now set forth in the claims. In either event, Applicant respectfully urges that none of the cited art have any disclosure of reading an opcode, and in response to the reading, selecting either the ALU or the encryption execution unit. Accordingly, Applicant respectfully urges that the cited art is legally precluded from rendering the presently claimed invention obvious under 35 U.S.C. 103(a).

Page 3, paragraph 6, Claim 20 was rejected under 35 U.S.C. 103(a) as being unpatentable over Farrell et al, in view of Chi et al. and Narad et al.

Applicant's novel invention, as set out in representative claim 20, comprises in part:

20. A programmable processing engine of a network switch comprising:  
an input header buffer;

an output header buffer; and  
*a plurality of processing complex elements* symmetrically arrayed into rows and columns that are embedded between the input header buffer and an output header buffer, *each processing complex element comprising a microcontroller core having an encryption tightly coupled state machine (TCSM) unit that is selectively invoked in response to an instruction decode stage (ID stage) reading an opcode; and a selector to select an output from either the microcontroller OR the TCSM.*

Applicant respectfully urges that none of the cited art discloses Applicant's claimed novel *a plurality of processing complex elements . . . each processing complex element comprising a microcontroller core having an encryption tightly coupled state machine (TCSM) unit that is selectively invoked in response to an instruction decode stage (ID stage) reading an opcode . . . a selector to select an output from either the microcontroller OR the TCSM.*

Applicant respectfully urges that the absence of any disclosure of Applicant's claimed use of *reading an opcode* to select either *a microcontroller or an encryption tightly coupled state machine (TCSM)*, precludes the cited art from rendering Applicant's claimed novel invention obvious under 35 U.S.C. 103(a).

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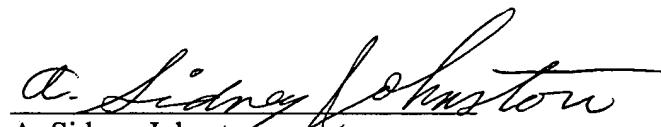
All independent claims are believed to be in condition for allowance.

All dependent claims are believed to be dependent from allowable independent claims, and therefore in condition for allowance.

Favorable action is respectfully solicited.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,

  
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